Artificial intelligence: patentability of an interface between the human brain and a computer

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These days, the tech community is focusing on artificial intelligence. Major Silicon Valley tech companies are rolling out their own AI projects – Elon Musk and Sam Altman, for example, recently created a venture called OpenAI, a nonprofit artificial intelligence research company.

Artificial intelligence is intelligence exhibited by machines, particularly computers. Over the past century, development of AI has focused on creating and programming computers to do the work of humans better and faster. Examples include voice recognition software, machine learning, and neural networks. Moving forward, however, developments may focus on the interface between a human brain and a computer.

Science fiction? Maybe, but Elon Musk noted in a June 2016 interview at Code Conference 2016 that the next step in AI is a "neural lace": a digital, high-bandwidth neural interface allowing interaction between the human brain and a computer.

If this is the future of AI, is it patent-eligible? The answer lies in the language of the claims. Drafted appropriately, these types of inventions can indeed be patent-eligible.

The advent of Mayo, Bilski, and Alice means that AI, because it involves software, has increasingly become more
difficult to patent. The Supreme Court laid out the framework for patentability of computer methods in Alice Corp. v CLS Bank as a two-part test in view of Mayo Collaborative v Prometheus Labs:

1. Determine whether the claims are directed to a patent-ineligible concept
2. Determine whether the claim's elements, both individually and in combination, transform the claims into a patent-eligible application. A patent-ineligible concept includes a law of nature, a natural phenomenon, or an abstract idea

At some level, all software can be viewed as abstract ideas, thereby failing the first prong of the Alice/Mayo inquiry. However, in 2016, the Federal Circuit breathed some life back into software patents. With decisions like Enfish, the Federal Circuit has been willing to not categorically find software to be an abstract idea, holding that the database patents at issue were not directed to an abstract idea (step 1 in the Alice/Mayo framework), but rather to improvements in computer operations. The Court looked at the specification, which describes advantages of a database consisting of a single table, resulting in faster search times and smaller memory requirements.

New types of AI devices would likely have several aspects available for claiming, among them:

- An implantable medical device that can stimulate and record neural activity
- Software to control the device and the brain
- Methods for treating neurological dysfunctions

With respect to the first aspect, implantable medical devices would be articles of manufacture and patentable subject matter. The device itself would be treated like a pacemaker or stent.

What about software controlling a device implanted in a patient's brain and serving as a conduit to the patient's thoughts and expressions? Under current case law, this software could be considered patentable if it is not an abstract idea, or, if an abstract idea, the claim elements transform the claims into a patent-eligible application. Accordingly, if the claim is drafted to recite technical advances in the software that permit the device to operate and interact with the human brain, this type of software could be patentable. However, if the claims recite standard computer operations, it likely would not be.

Also, these types of inventions could encounter issues on both the Mayo and Alice sides of eligibility. The claim could encompass biological processes that are controlled or directed by the software in the device. For example, if the software can emulate a biological process – for example, human eyesight – that function could be considered unpatentable subject matter because it reflects all three issues: naturally occurring, a law of nature, and an abstract idea. Or it could be that the creation of eyesight by a human-implantable device, controlled by a software algorithm, is viewed in the same way as the genetically modified bacterium in Diamond v. Chakrabarty, and therefore is patent eligible. Finally, drafted poorly and found to encompass human brain functions, the claim could implicate the AIA prohibition on patenting claims directed to or encompassing a human organism.

The third item concerns claims regarding methods of treatment of neurological disorders, such as epilepsy, using an implantable electrical device. Such claims are permissible in the US. Accordingly, this could be an avenue to pursue for patent protection.

This landscape is evolving, and the final patentability determination will rest in the claim language. Focusing claims on subject matter clearly within the patentability standards should alleviate patentability issues. However, when claiming the algorithm used to interact with the brain, the claims will need to be carefully drafted to sidestep the current subject matter issues facing life sciences and software patents.

Find out more about this developing area of law by contacting the author.

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